

**General Scope**

The scope is to supply, erect, commission and training of a **Reusable Wire EDM Machine** as per the following specification

**(Evaluation criterion for L1 will be on the basis of total cost of Basic machine, Extended Warranty, Erection, Commissioning & Training, Standard accessories/ Consumables, & Breakdown AMC)**

**Basic Machine specifications**

*(Specific values shall be provided wherever applicable, simply replying with "complied" or "confirmed" to such clauses will not be accepted. )*

Sl. No.	Description	Value	Unit	Compliance/ Values/ Remarks
<b>1.</b>	<b>Features</b>			
1.1.	<b>Application</b>	Machining of Aluminum, Stainless Steel, Titanium, Copper and Nickel Alloys.		<b>Complied/ Not Complied</b>
1.2.	Make	Please specify		<b>Please Specify</b>
1.3.	Model Name	Please specify		<b>Please Specify</b>
1.4.	Machine type	Flushing		<b>Complied/ Not Complied</b>
1.5.	X-Axis traverse	800 or higher	mm	<b>Please Specify value</b>
1.6.	Y-Axis traverse	600 or higher	mm	<b>Please Specify value</b>
1.7.	Z-Axis traverse	800 or higher	mm	<b>Please Specify value</b>
1.8.	Taper Angle	Please Specify value	degree	<b>Please Specify value</b>
1.9.	Maximum work Height	800 or higher	mm	<b>Please Specify value</b>
<b>2.</b>	<b>Accuracy</b>			<b>Please Specify standard</b>
2.1.	Positional Accuracy per 100mm	0.020 or better	mm	<b>Please Specify value</b>
2.2.	Repeatability per 100mm	0.010 or better	mm	<b>Please Specify value</b>
<b>3.</b>	<b>Feed Back System</b>			
3.1.	Linear scales on X and Y axis	Required	mm	<b>Complied/ Not Complied</b>

3.2.	Resolution	0.005 or better	mm	<i>Please Specify value</i>
<b>4.</b>	<b>Table</b>			
4.1.	Table size	1000 x 700 or higher	mm	<i>Please Specify value</i>
4.2.	Admissible load	1000 or higher	kg	<i>Please Specify value</i>
<b>5.</b>	<b>Feed – Linear Axes</b>			
5.1.	Type of drive	Stepper drive		<i>Complied/ Not Complied</i>
5.2.	High precision LM guide ways on X,Y & Z	Required		<i>Complied/ Not Complied</i>
5.3.	Motorised Z axis	Required		
5.4.	Preloaded backlash free ball screws as drive element for X and Y axis	Required		<i>Complied/ Not Complied</i>
5.5.	Automatic centralised Lubrication for all axes guide ways & ball screws	Required		<i>Complied/ Not Complied</i>
<b>6.</b>	<b>Salient features</b>			
6.1.	Maximum cutting speed	100 or higher	mm <sup>2</sup> /min	<i>Please Specify Type</i>
6.2.	Electrode wire diameter (Molybdenum reusable)	0.18	mm	<i>Please Specify value</i>
6.3.	Maximum working current	6 or higher	A	<i>Please Specify value</i>
6.4.	Best surface finish in OHNS steel	1.5 or better	μRa	<i>Please Specify value</i>
6.5.	Adjustable Wire guide frame	Required		<i>Complied/ Not Complied</i>
<b>7.</b>	<b>CNC System</b>			
7.1.	System	Windows based		<i>Complied/ Not Complied</i>
7.2.	Program memory	1 or higher	GB	<i>Please Specify value</i>
7.3.	Extended memory	160 or higher	GB	<i>Please Specify value</i>
7.4.	Simultaneous Controllable axes	X, Y, U, V		<i>Complied/ Not Complied</i>
7.5.	Display	15 or higher	inch	<i>Please Specify value</i>
7.6.	USB port	1 or higher	No.	<i>Complied/ Not Complied</i>
7.7.	Overriding of speed and EDM parameters	Required		<i>Complied/ Not Complied</i>

7.8.	Dry spark mode for verticality alignment of wire	Required		<b>Complied/ Not Complied</b>
7.9.	Dry run	Required		<b>Complied/ Not Complied</b>
7.10.	Diagnostics:- display of error messages with / without the interruption of the operation in progress for alarms, programming errors, operational errors, memory input/ output errors	Required		<b>Complied/ Not Complied</b>
7.11.	Memorizing the current position in case of unexpected power failure/ intentional stopping and restarting of operation from the memorized position	Required		<b>Complied/ Not Complied</b>
7.12.	Auto stop while wire brakes	Required		<b>Complied/ Not Complied</b>
7.13.	Real time display of Axis positions, Active G & M codes, Coordinate system, Error messages, Machine parameters & EDM technology, Machining time, Cutting length, Total path length, Path to go	Required		<b>Complied/ Not Complied</b>
7.14.	Built-in and user definable technology for different materials	Required		<b>Complied/ Not Complied</b>
<b>8.</b>	<b>Programming</b>			
8.1.	Absolute and incremental coordinate system	Required		<b>Complied/ Not Complied</b>
8.2.	ISO programming in metric	Required		<b>Complied/ Not Complied</b>
8.3.	Coordinate transformation (Copy, Move, Rotation , Scale & Mirror)	Required		<b>Complied/ Not Complied</b>
8.4.	Wire path real-time Simulation	Required		<b>Complied/ Not Complied</b>
8.5.	Edge finding cycle	Required		<b>Complied/ Not Complied</b>
8.6.	Centre finding Cycle	Required		<b>Complied/ Not Complied</b>
8.7.	Optional stop	Required		<b>Complied/ Not Complied</b>
8.8.	Blok skip	Required		<b>Complied/ Not Complied</b>
<b>9.</b>	<b>Interpolation</b>			
9.1.	Linear interpolation	Required		<b>Complied/ Not Complied</b>
9.2.	Circular interpolation	Required		<b>Complied/ Not Complied</b>
9.3.	Complex shape cutting (top and bottom different profiles)	Required		<b>Complied/ Not Complied</b>
<b>10.</b>	<b>CAM software</b>			

10.1.	Windows based Graphics external software for easy programming (CAM)	Required		<b>Complied/ Not Complied</b>
<b>11.</b>	<b>Dielectric</b>			
11.1.	Dielectric Medium	DM water with Gel/ Coolant		<b>Complied/ Not Complied</b>
11.2.	Capacity of dielectric tank	Please specify	Liters	<b>Please Specify value</b>
11.3.	No of filters on filtration system	Please specify		<b>Please Specify value</b>
<b>12.</b>	<b>Safety features/ Machine guarding</b>			
12.1.	All moving parts /guide ways/ ball screws shall be protected against dust incursion by providing suitable covers /bellows	Required		<b>Complied/ Not Complied</b>
12.2.	Machine shall be provided with adequate guarding and doors.	Required		<b>Complied/ Not Complied</b>
12.3.	Control system elements shall be enclosed in a dust-proof cabin with air conditioning (Cabinet A/C)	Required		<b>Complied/ Not Complied</b>
<b>13.</b>	<b>Details of standard accessories, Consumables required</b>			
13.1.	Servo voltage stabilizer	1	No.	<b>Complied/ Not Complied</b>
13.2.	Machine Mounting pads	1	Set	<b>Complied/ Not Complied</b>
13.3.	Work space lamp	1	No.	<b>Complied/ Not Complied</b>
13.4.	Set of work clamping kit	1	Set	<b>Complied/ Not Complied</b>
13.5.	Dielectric filters (additional)	20	Nos.	<b>Complied/ Not Complied</b>
13.6.	Molybdenum electrode wire of Dia 0.18 mm (Reusable) 2000 m length wire spool	20	Spools	<b>Complied/ Not Complied</b>
13.7.	Roller assembly for guiding wire Upper & Lower (additional)	4	Set	<b>Complied/ Not Complied</b>
13.8.	Rollers in wire path movement (additional)	3	Set	<b>Complied/ Not Complied</b>
13.9.	Adaptor plate for wire guide with nozzle (without wire guide) (additional)	2	Set	<b>Complied/ Not Complied</b>
13.10.	Carbide current pickup upper & lower (additional)	5	Set	<b>Complied/ Not Complied</b>
13.11.	Dielectric Gel/ Coolant	50	liter	<b>Complied/ Not Complied</b>
13.12.	Bearings in wire path movement (additional)	3	Set	<b>Complied/ Not Complied</b>

<b>14.</b>	<b>Power supply</b>			
14.1.	Machine should work on AC 415V±10%, 50Hz ± 5%, 3 Phase & neutral 4 wire system	Required		<b>Complied/ Not Complied</b>
14.2.	Power rating	Please specify	kVA	<b>Please Specify value</b>
<b>15.</b>	<b>Miscellaneous</b>			
15.1.	Machine footprint (Length x Width x Height)	Please specify	mm	<b>Please Specify values</b>
15.2.	Approximate machine weight	Please specify	kg	<b>Please Specify value</b>
<b>16.</b>	<b>Technical Documentation:</b> Following technical documentation in 'English' shall be supplied along with the machine			
16.1.	Instruction/ Operational manual			<b>Complied/ Not Complied</b>
16.2.	Spare parts manual			<b>Complied/ Not Complied</b>
16.3.	Maintenance manual for mechanical, electrical/electronic systems.			<b>Complied/ Not Complied</b>
16.4.	Electrical wiring diagrams.			<b>Complied/ Not Complied</b>
16.5.	Preventive maintenance check list, trouble shooting charts and guidelines			<b>Complied/ Not Complied</b>
<b>17.</b>	<b>Shipment Clearance</b>			
17.1.	<p>Following tests shall be performed at manufacturer's site as per the test plan.</p> <ul style="list-style-type: none"> <li>i. Positioning accuracy test as per Cl. No. 2.0</li> <li>ii. Trial Cutting test to prove maximum cutting speed (work material shall be arranged by the party)</li> <li>iii. Trial Cutting test to prove maximum cutting height (work material shall be arranged by the party)</li> <li>iv. Trial Cutting test to prove technologies in Aluminium, Stainless steel, Ti alloy, Nickel alloy, Copper (work material will be arranged by LPSC)</li> </ul>			<b>Complied/ Not Complied</b>
17.2.	<p>LPSC reserves the right to decide the mode of despatch clearance, which is proposed to be either of the following:</p> <p>Pre-delivery inspection of the equipment shall be carried out at manufacturer's site before dispatch at the presence of LPSC representative. The cost of travel and accommodation of LPSC engineers will be borne by LPSC</p> <p style="text-align: center;"><b>or</b></p> <p>Test certificate as specified at <b>Cl. No. 17.1</b> shall be sent to us in advance for giving clearance for shipment of machine.</p>			<b>Complied/ Not Complied</b>

<b>18.</b>	<b>Erection, Installation and Commissioning</b>	
18.1.	The machine shall be erected, installed and commissioned at LPSC, Valiamala, Thiruvananthapuram, Kerala, India. Supplier shall arrange all the necessary logistics for <b>unloading the machine and placing the same at LPSC site.</b>  All necessary tools, instruments and equipments for erection, installation and commissioning of the machine shall be brought by supplier.	<i>Complied/ Not Complied</i>
18.2.	Supplier shall train 2 of LPSC's engineers on operation, programming and machine maintenance for one week after commissioning of machine at installation site.	<i>Complied/ Not Complied</i>
18.3.	Supplier shall carry out suitable startup cutting trials to demonstrate the machining capabilities. Raw materials to carryout trials shall be supplied by LPSC	<i>Complied/ Not Complied</i>
18.4.	Final acceptance of the machine shall be based on satisfactory completion of the activities mentioned at <b>Cl. Nos. 18.1 to 18.3</b>	<i>Complied/ Not Complied</i>
18.5.	Installation & commissioning and training at LPSC shall be completed within <b>1 month</b> from the date of communication from the LPSC on receipt of machine at LPSC.	<i>Complied/ Not Complied</i>
<b>19.</b>	<b>Other Terms and conditions</b>	
19.1.	Roadworthy packing of machine and its accessories is under supplier's scope.	<i>Complied/ Not Complied</i>
19.2.	The supplied machine shall be warranted for a period of minimum 12 months from the date of machine acceptance at LPSC site.	<i>Complied/ Not Complied</i>
19.3.	After sales, service shall be provided by the supplier for a minimum period of 10 years from date of machine acceptance.	<i>Complied/ Not Complied</i>
19.4.	Supplier shall indicate the delivery period from the date of receipt of technical and commercial clear purchase order.	<i>Please specify delivery period in weeks</i>
19.5.	If the machine or any part of it is lost or damaged in transit, the replacement of such machine or part shall be effected with no additional cost.	<i>Complied/ Not Complied</i>
<b>20.</b>	<b>Checklist for the quotation</b> Please confirm Quoted or Not	
20.1.	Basic Machine including standard accessories, Consumables at <b>Cl. No. 13.1 to 13.12</b>	<i>Quoted/ Not quoted</i>
20.2.	Erection, Installation, Commissioning and Training charges	<i>Quoted/ Not quoted</i>
20.3.	Packing And Forwarding Charges (FOR LPSC , Valiamala)	<i>Quoted/ Not quoted</i>

20.4.	Extended Warranty for 1 year after the expiry of standard warranty.	<b>Quoted/ Not quoted</b>
20.5.	Call basis Breakdown visit charges for 1st day, price shall be valid for 3 years after the extended warranty period. (will be ordered only after extended warranty period). Terms and conditions as per Annexure-2.	<b>Quoted/ Not quoted</b>
20.6.	Call basis Breakdown visit charges for subsequent days, price shall be valid for 3 years after the extended warranty period. (will be ordered only after extended warranty period). Terms and conditions as per Annexure-2	<b>Quoted/ Not quoted</b>
20.7.	Probable spares list for AMC, Price shall be valid for entire period of AMC (This cost will not be a criterion for evaluation of L1 )	<b>Quoted/ Not quoted</b>

<b>A. Qualification Criteria</b>		
	<b>Criteria</b>	<b>Documents required</b>
A.1.	Proof of establishment of company/business for a period of more than 5 years.	<p>The bidder must be a reputed original equipment manufacturer in the business of supply, installation and servicing of CNC wirecut EDM machines for a period of not less than 5 years</p> <p>The certificate of incorporation or any other relevant certificate to this effect is required to be enclosed.</p> <p>If necessary, the representative of LPSC may visit the Bidder/OEM Ex-Works for evaluation.</p>
A.2.	Declaration that the bidder had not been blacklisted or debarred anywhere in India or abroad by any organization.	A certificate/undertaking on the letter head of the Company to the effect that the bidder had not been blacklisted or debarred anywhere in India or abroad by any organization.
A.3.	Previous experience & copy of performance certificates along with Purchase Orders.	<p><b>(Machines supplied to educational institutions will not be considered for the below mentioned evaluation )</b></p> <p>The respondent shall have a minimum of 3 installations of Reusable wire EDM machines of similar or higher capacity in ISRO centres or Public sector or Government organizations or in any private industries in India over last 5 years.</p> <p>Party shall produce PO copy and Installation &amp; commissioning report for the same.</p>
A.4.	AMC details.	Offer without AMC for three years with price breakup for spares shall not be considered.
A.5.	Local content	Minimum 20% Local content is required for the acceptance of the offer

**Terms and Condition for AMC, Reusable Wire EDM machine**

**1.0 SCOPE OF WORK**

1.1 Non-Comprehensive AMC includes break down maintenance as and when required in the event of malfunction/breakdown of the machine.

**1.2 Break down maintenance**

- a) Break down call shall be attended to within 48 hours of intimation by our Contact Person.
- b) If replacement of any spare is required, necessary spares to be replaced with concurrence of LPSC contact person. The cost of the items replaced shall be paid by LPSC as per the price furnished in the spare list for which supplier shall be requested to submit the list of spares with price breakup.
- c) In case of replacement of any spares which are not listed in the spare list mentioned above or any component cannot be repaired at our premises, the same can be replaced/repared as per following procedure.
- d) The supplier shall asses the condition and gets the concurrence of the contact point of LPSC. Base on the assessment, the supplier shall submit a quote to LPSC. In case, the supplier is unable to submit the quotation until he receives the equipment at his premises to assess the failure, he shall provide the cost based on the probable causes failure giving details of costing.
- e) Based on the offer received, indent shall be raised with all relevant details.
- f) LPSC shall place a repair order after necessary processing and approvals.
- g) In case supplier changes/does any spare parts/extra work while repairing the system at supplier's premises which are not covered in the said repair order, the supplier shall intimate LPSC about the additional work/ spare parts required over and above the those included in the order, along with charges for the same and order amendment shall be issued with necessary approvals

**2.0 Payment**

Pro-rata half yearly payment shall be made after completion of each half year (pro rata payment for break down maintenance shall be made after satisfactory repair and certification by focal point and duly approved by head of the facility) against your bill along with Service Call Report duly signed by the Contact Person and countersigned by the head of the facility and sent to the Sr. Accounts Officer, LPSC, Valiamala for arranging payment. Your invoice shall be in triplicate, Original to the Paying Authority, Duplicate to the Contact Person and Triplicate to your Service Engineer.

**3.0 Security Deposit**

On acceptance of the order, you shall submit an interest free amount being 10% of the total contract/order value towards security deposit. This security deposit is collected towards the performance of the Contract. The said Security Deposit shall be submitted either in the form of Bank Guarantee/Demand Draft/PDR receipts duly endorsed in the name of the Centre. The Security Deposit will be returned to you on successful completion of the Contractual obligations; failing which it shall be forfeited / adjusted.

**4.0 Fall Clause**

The service charges quoted by you shall in no event exceed the lowest charges at which you service the machines of identical description to any other supplier during the period of



this Contract. If at any time during the said period, you reduce the service charges of such item to any other customers, it shall be forth with done after the date of coming in to force of such reduction of service charges shall stand correspondingly reduced.

**5.0 Down-Time Compensation**

In case the break-down calls are not attended to within 48 hours of intimation and if reported problem is not solved within 96 hours without valid reasons, down time compensation @ 0.5% (of the annual maintenance charges) per day shall be recovered from you subject to a maximum of 5%.

**6.0 Force Majeure**

If at any time during the continuance of the order the performance in whole or part by either supplier of any obligation under this order shall be prevented or delayed by reasons of any war, hostility, acts of public enemy, civil commotion, sabotage, fire, floods, lightening, epidemic, quarantine restrictions, strikes, go-slow, lockout or acts of God, notice of which is given either supplier to the other within 21 days from the date of occurrence thereof, neither supplier shall be reasons of such eventually be entitled to terminate this order nor shall either supplier have any claim for damages against the other in respect of such non-performance or delay in performance.

**7.0 Arbitration**

Dispute, If any shall be settled mutually, failing which it shall be referred to a One-Man – Arbitrator appointed by Director, LPSC in accordance with the Arbitration & Conciliation Act 1996, whose decision shall be final and binding on both parties.

**8.0 Addition And Deletion**

LPSC reserve the right to add/delete any number of machines in this contract during the currency of the Contract.

**9.0 General**

9.1 All faults /maintenance shall be attended to during the normal working hours (09.00 Hrs. to 17.00 Hrs. from Monday to Friday) of the Centre.

9.2 Service engineer who are conversant with CNC machines having thorough knowledge of electrical, electronic and mechanical areas shall only be deputed.

9.3 In the event of any damages to our property or personal injury to our personnel due to the negligence of your personnel, the responsibility shall solely rest with you for rectifying or compensating for the injury to our personnel.

9.4 LPSC shall not be responsible for any loss of life or injury of the service personnel while performing the contract at our premises due to natural calamities /accident/explosion etc., Hence insurance of the workers/ staff deployed against such eventualities shall be done by you positively and no compensation shall be paid by us.

9.5 You shall go through the operation logs to pin point trouble and advice the contact person how to avoid them in future.

9.6 You shall provide any clarifications required by the contact person as technical documentation.

9.7 If the machine cannot be made available by us due to workload, the re scheduled date of visit should be mutually agreed upon with the contact person.

9.8 You shall arrange for police verification of your employees and submit the report on acceptance of the contract.

9.9 You shall deploy only Indian national to our centre for servicing.

9.10 Your service person(s) should strictly comply with our security guidelines.